



Dr. Parsons's Report to the Local Government Board on some outbreaks of Fever and Diphtheria in the Romford Rural Sanitary District, and on the Sanitary Condition of the District.

GEORGE BUCHANAN,
Medical Department,
April 15, 1884.

Several outbreaks of fever and diphtheria in the Romford Rural District having been reported to the Local Government Board during recent years, and complaints having from time to time been received respecting the sanitary condition of portions of the district, inspection was ordered by the Board, and was made in February 1884.

The Romford Rural Sanitary District consists of those parts of the Romford Union which are not comprised in the Local Board districts of Romford and Barking; it has an area of 45,677 acres, and a population of 21,862. The urban districts include portions only of the respective parishes; that of Barking was only constituted in 1882. The Union is bounded on the south by the River Thames, which is bordered by a belt, about a mile wide, of alluvial marshes, with scanty population. To the north of these marshes is an extensive plain of gravel resting on London clay; this is crossed by the high roads and railways from London to Colchester, and to Tilbury and Southend; and in the neighbourhood of these lines of communication the most populous and increasing places are situated. The northern part of the district is hilly, being part of what was formerly Hainault Forest: the soil is composed of the London and boulder clays, with a small outlier of pebbly Bagshot beds, on which the village of Havering-atte-Bower stands.

The industries carried on in the rural district are agriculture, especially market gardening, brickmaking, and a few other manufactures. The population also contains, in addition to the local tradesmen and professional men, many business men who are occupied by day in London; this is especially the case in the neighbourhood of Ilford, where much building is being carried on.

Some of the parishes in the Union are very extensive, and, forming long narrow belts extending from the river to the northern part of the district, comprise portions differing considerably in character and density of population.

The Rural Sanitary Authority have from time to time carried out a few small works, but not any large or comprehensive scheme. They have, however, recently approved a plan prepared by Mr. Brundell, C.E., for the sewerage of Ilford, Chadwell Heath, and Barkingside, which now awaits the sanction of the Local Government Board.

At the present time there are, in some of the more compactly built places, old sewers—ditches which have been culverted, or drains put in for carrying off surface water from the roads—which are used for conveying sewage. In some instances, as at Butt's Green, Hornchurch, at Dr. Barnardo's Homes, Barkingside, and at South Park, Ilford, sewers have been constructed by private owners for particular groups of houses, with small filtering tanks to clarify the sewage before its admission into a stream. These filtering tanks, which have been constructed with the object of preventing the nuisances which had previously existed from the admission of the crude sewage into watercourses, were not found in any instance to be acting satisfactorily, owing apparently to want of continued attention and of renewal of filtering materials.

Cesspools, commonly with an overflow into a neighbouring ditch, or from which the liquid soaks away into the gravelly subsoil, are the usual means of disposal of sewage in most parts of the district. They are a source of nuisance and danger to health in various ways. They are rarely provided with means of ventilation, so that the foul gases generated in them tend to be forced up the drains; this is the more dangerous in that the drain inlets are frequently indoors, and that the inefficient bell-trap is in general use in the district. The Sanitary Authority, however, endeavour to get sink pipes made to discharge in the open air, and earthenware gullies or syphons substituted for bell-traps. In some cases bad smells were complained of, which appeared to be due to the suction into the house of foul air from a sewage-soaked subsoil. The cesspools are sometimes very close to the houses. There is danger also of the soakage contaminating the wells. Nuisances from sewage-polluted ditches and streams are

frequent throughout the district, and in some cases of great gravity; thus an outbreak of enteric fever at Ley Street, Barkingside, seemed distinctly attributable to a nuisance of this kind.

For most houses in the district the privy accommodation consists of the old fashioned cesspit privy, but the larger houses have waterclosets discharging into cesspools, similar to those already mentioned; ventilation of the soil pipe is less frequently provided than absent. In some of the modern-built cottages there is an intermediate arrangement; the closet is provided with a hopper, and discharges through a drain into a cesspool a few feet distant. In these cases there is no apparatus for flushing, which is supposed to be effected by pouring the slops into the closet; but in practice this mode of flushing is often not sufficient; the insides of the pans are dirty, and the outlets blocked up. In some instances cesspit privies are built against the houses, the filth and stench permeating the walls.

In the village of Hornchurch, the Sanitary Authority are introducing box closets having galvanized wrought-iron rectangular pails under the seats, and they propose extending this system to other parts of the district. It will probably be found a very suitable one in places where sewers are not available, but in compactly built places, where the houses have little garden ground attached, it will need to be conjoined with a system of public scavenging. The Sanitary Authority propose to undertake or contract for the removal of refuse and contents of privies, &c. in the more densely populated parts in the district, but as regards the outlying parts, where the distances to be travelled would make the collection very expensive, and where, owing to the large demand for manure, the occupiers would probably find no difficulty in disposing of such matters, it is proposed to put in force byelaws under section 44 of the Public Health Act, 1875, imposing the duty upon the occupiers.

At many cottages the back yard was found littered with ashes and rubbish, owing to the absence of an ash-bin or proper receptacle for such matters.

The mains of the South Essex Waterworks Company are laid down in Ilford, Hornchurch village, Chadwell Heath, and part of Collier Row. This Company's water is taken from wells in the chalk at Grays.

In other parts of the district water is usually obtained from shallow wells in the superficial gravel bed. These wells are often liable to pollution; and in some places, as at Barkingside, and part of Ilford, this is so to such an extent that none of the local wells are fit to drink from, and water for drinking purposes is brought in carts from a distance, and retailed by the bucketful. Again, in the clay tract in the north of the district water is scarce; it is obtained from ponds, and in some instances has to be carried long distances.

The Rural Sanitary Authority have taken no action under the Public Health (Water) Act, 1878.

The Rural Sanitary Authority have been invested with urban powers under sections 42, 44, 157, 158, 169, and 170, of the Public Health Act, 1875, with respect to the parishes of Dagenham and Hornchurch, and the extra urban portion of the parish of Barking, which includes Ilford, part of Chadwell Heath, and Barkingside.

Byelaws following the model series I., II., III., IV., and VI., have been adopted by the Rural Sanitary Authority, and await the sanction of the Local Government Board.

The duties appertaining to their respective offices are diligently and judiciously performed by Mr. Wright, medical officer of health, and Mr. Hamilton, inspector of nuisances.

The abatement of nuisances receives attention, but many of the most serious nuisances existing in the district cannot be effectually dealt with until sewerage has been provided. Nuisances frequently occur in some parts of the district from accumulations of manure brought from London for use in agriculture, and deposited on road sides, or in the neighbourhood of houses.

Houses in which infectious disease has occurred are visited, and, where necessary, disinfectants furnished, with printed and verbal directions for their use, and such measures of isolation as are practicable are recommended. Cases of smallpox requiring isolation are removed, if the patient's state permit, to the Smallpox Hospital at Highgate, which is 10 or 12 miles from the nearest part of the district; but there is no hospital accommodation available for other infectious diseases. In 1881 the Rural Sanitary Authority proposed to build a hospital on a piece of ground belonging to the Guardians, near the workhouse; but the Romford Local Board, in whose district the ground is situated, refused to sanction the plans, and it is stated that no other available and suitable site can be found. There is no disinfecting apparatus, but the clothes of smallpox patients are burnt, the Sanitary Authority paying compensation.



The following are the particulars obtained respecting the several outbreaks of fever and diphtheria which have occurred in the district in recent years.

Enteric Fever at Victoria Cottages, Dagenham.—In the end of November 1883 an outbreak of enteric fever occurred in a row of cottages in the New Road, about a mile south of Dagenham village. Four households were attacked in that month, and two in January 1884. There had been in all, up to the time of my visit, 11 cases and deaths. The row consists of 29 cottages, in several blocks, and a public-house. The situation is open: the cottages have in front the road, running east and west; and behind, a piece of garden ground, which slopes a little to the edge of the marsh, from which it is separated by a ditch. The course of this ditch is from east to west, but it diverges somewhat from the road, so that it is much farther from the houses at the west end than from those at the east end of the row. The slop-water drains from the houses lead into cesspools with an overflow into this ditch; which, at the time when the fever commenced, is described as having been very offensive, though it had been cleansed before I saw it. At the time of my visit some of the drains in the garden were blocked, and liquid sewage was welling up. The privies, which are of the cesspit kind, are distant from the houses. At either end of the row is a well; that at the east end is open and dilapidated, and is obviously liable to be fouled by surface water. That at the west end, which is covered and furnished with a pump, appears at first sight much more secure, being distant from any privy or drain, and on higher ground. There is, however, no pump-trough or drain to carry off the waste water from the pump, which runs in an open gutter for three or four yards, and then soaks away into the soil. At this place the ground, which being a gravelly bank would naturally be dry, is rendered so wet and boggy that watercress was growing there, and the soil was discoloured with black foetid matter to a depth of 6 to 9 inches. Paraffin oil poured upon the ground here rapidly soaked away, and three days later was found in the well water. The appended analysis of the well water made by Dr. Dupré shows a high proportion of nitric acid and albuminoid ammonia, indicating contamination by nitrogenous organic matter, as well as microscopic constituents probably derived from household waste. It was stated by the neighbours that some of the people in the row were in the habit of washing dirty utensils at the pump. The site of the well is close to the high road.

In all the households attacked in November the patients were children of from 1 to 11 years; the first cases in each commenced within a few days of each other; they had attended different schools or none. The medical officer of health states that the children of the affected families were in the habit of playing on the edge of the sewage-polluted ditch, to the effluvia from which he attributes the outbreak. There are, however, some circumstances which appear to me to point rather to the use of the contaminated water from the well at the west end of the row. All the cases of fever occurred in houses in which this water is used; these are 23 in number; whereas in the seven houses at the east end of the row, which are nearer to the ditch, but in which the water from the well at the east end is used, no fever occurred. The people too who suffered in January were older persons, who were not likely to have played by the ditch.

Enteric fever at Great Ilford.—In the winter of 1882–3 a considerable outbreak of enteric fever took place at Ilford. The town appears to have been almost free from this disease during 1880, 1881, and up to the middle of November 1882. About that time cases began to occur; but it was not until Dec. 23rd, when the disease had become widely spread, that information of it reached the officers of the Sanitary Authority through the channel of the returns of deaths. In the latter half of November 1882 five households were invaded, in December 16 more, and in January 6, and a dropping succession of cases has occurred since then up to the present time; the total number of cases reported being 59 in 35 households, including two freshly attacked after about a year's interval. Doubtless there were other cases which were not heard of.

As regards sanitary condition, Ilford is described by the medical officer of health with little exaggeration as being “as ripe for the outbreak of a serious epidemic of typhoid fever, should the germs of the disease be introduced, as a cornstack is ripe for the flames should a lighted match be applied to it.” There are some sewers, but they are unventilated, and little is known of their condition; and in the less central parts the only means of drainage are cesspools, often close to the houses, from which the contents soak away into the gravelly subsoil, or overflow, causing nuisance on the surface.

The cesspools and drains are unventilated, and many houses have drain inlets indoors, fitted only with the useless bell-trap; while in other cases there are untrapped

gullies in the yards close to the houses. Complaints of bad smell from drains were frequently met with during the inspection. Closet accommodation consists of water-closets, hopper closets without water, and cesspit privies; some of the latter very near to, or built against the houses. The water supply is mostly furnished by the South Essex Company; but there is a public pump in the centre of the town, the water of which is not only drunk by persons in the neighbourhood, but is carted to some outlying places not otherwise supplied, and retailed by the bucketful.

The origin of the outbreak cannot be stated with certainty; but if the disease were introduced from without it must have been by some case prior to the middle of November, for the five households attacked in that month were all attacked within a few days of each other.

The earlier fever cases were distributed in various parts of Ilford, and some occurred in outlying places about half a mile distant from the town. Unsanitary conditions were found at most of the houses in which they occurred, but of these houses different groups had different sewerage, and one group had a separate water supply; at the others water was obtained either from the South Essex Company, or the public pump, both sources being used in other places where no fever occurred.

The medical officer of health came ultimately to the conclusion that the main outbreak in November and December was due to an infected milk supply. The circumstances cannot now be submitted to such an examination as would settle the question, but the following facts appear to point to such a connexion:—

- (a.) Of the 21 households invaded up to the end of December 1882, this milk was in use in 16*; of three the milk supply was not ascertained; and in two only, and those near the end of December, by which time the infection would have become widely diffused, was it known to have been from other sources. On the other hand, in the households attacked subsequent to the end of December the milk was obtained from a number of sources with no special incidence upon any one. The dairy in question has a large custom, supplying more than 200 families; but it does not supply half the town, as there are four or five others. Thus, though the fever appears to have been confined at its first onset to the customers of the particular dairy, it really attacked only a small proportion of them, so that if infection of the milk occurred, it must have been only of an occasional and doubtless accidental nature.
- (b.) The dairy farm, which is about a mile from Ilford and in the country, was then supplied with water from a well about 25 yards from a cesspit privy; the water on analysis was found to be polluted. On the use of this water being discontinued the fever declined. (A new well has since been sunk, and other alterations made.)
- (c.) In December 1882 two of the dairyman's daughters suffered from typhoid fever. As, however, the first was not taken ill until nearly the middle of the month, it is evident that their illness was not the cause of, but only an item in, the general outbreak; that is to say, the circumstances, whatever they may have been, which, on the hypothesis, gave the milk a fever-producing quality, caused also the fever at the farmhouse.

I learn that a young man, a nephew of the dairyman's, who had been on a visit at the farm in November 1882, had been ill while there; he had recovered sufficiently to leave on December 2nd. Mr. Bass, of Ilford, informs me that he attended him from November 14th to December 2nd; he cannot remember the dates of the young man's arrival nor of the commencement of his illness, but has an impression that they were not long before his first visit on November 14th. As regards the nature of the disease, Mr. Bass says that he was on the look-out for typhoid, but could not find anything to corroborate his suspicions, either in the temperature (so far as he remembers it), in the condition of the bowels and skin, nor eventually in the duration of the disease. There was looseness of the bowels for about two days in the middle of the attendance. The disease was attended with great muscular pain, and Mr. Bass considered it at the time to be cold and rheumatism; he says that if it were typhoid it certainly presented very unusual symptoms.

The subsequent lingering of the fever has, doubtless, been due to unsanitary conditions of the kinds previously mentioned, its spread having taken place through the medium of infected sewage exhalations. In several instances it has affected groups of neighbouring houses, particularly where sewage nuisances existed.

* By 26 out of 31 persons attacked.

In one instance an association of diphtheria with enteric fever is said to have occurred. A little boy, aged six, after being ill three weeks of enteric fever, was attacked with diphtheria, from which his mother and an elder brother afterwards suffered. The mother had subsequently paralysis of the muscles of the voice. The cesspool was close to the house, and bad smells were complained of as coming up through the floor.

In two instances women were confined in houses where enteric fever was present, but were not attacked.

Enteric fever at Barkingside.—In the autumn of 1881 about 13 cases of enteric fever occurred at Ley Street, Barkingside. Barkingside is a scattered place in the parish of Barking, two miles north of Ilford; it consists of clusters of cottages, detached or in rows, following the course of several roads. One such cluster is called Ley Street, or Horns Lane. There are cottages on both sides of the road, but the cases of fever occurred only in those on the west side. The first case is said to have been a young man who was in the habit of going up to London with a horse and cart to fetch manure, and may thus in some way have come into contact with the specific poison of the disease. At the back of the cottages on the side of the road where the fever occurred, and only two or three yards distant from them, is an open ditch receiving the house slops and leakings from privies and pigsties, &c; this ditch is blocked in places, and full of horribly offensive sewage.

In this part of Barkingside water is very scarce; that for drinking is brought from Ilford in a cart, and sold at a halfpenny a bucketful. For washing, water is obtained from a sewage-polluted brook. There is a quasi-public pump, but it is out of repair; and the water of the well, which is only 9 feet from the sewage ditch before mentioned, has been shown by analysis to be polluted.

Similar conditions obtain in other parts of Barkingside. At Horse-shoe Row there is at the backs of the cottages a ditch almost equally offensive. There are in other places privies built against the houses, in one instance actually under a bedroom. Water is scarce, and has to be fetched long distances. A recent case of enteric fever in December 1883 was attributed to the patient having inhaled the effluvia from a foul cesspool.

The Sanitary Authority propose including Barkingside in the sewerage scheme which they have adopted for Ilford and neighbourhood. They have also been in communication with the South Essex Waterworks Company for a supply of water to Barkingside, and in September 1882 the Company promised to extend their mains thither, but they have not yet done so.

Diphtheria at Chadwell Heath, Dagenham, &c.—In the winter of 1883-4 several apparently independent groups of cases of diphtheria have occurred in the Romford Union.

One of these was in Chadwell Heath, a village on the high road between Ilford and Romford, where the parishes of Barking, Hornchurch, and Dagenham join. Here four households are known to have been attacked; there were five cases, all of which recovered. The first case began about the middle of November; its origin is not known. The patient was a boy of three; he had not been attending any school; but two other children of the family attended for a few days, until the nature of the disease was known, a small private school in Chadwell Heath. Of the other households attacked, one was that of the schoolmistress, and in the two others the first case was a child attending this school. The school was at once closed. In all the houses attacked there were nuisances from offensive and untrapped drains, and at the schoolmistress's the water was obtained from a polluted well. (The South Essex water has since been laid on.)

The drainage of Chadwell Heath is into cesspools with overflow into nearly stagnant roadside ditches. One of these ditches has been covered in, and converted into a sewer, over which houses have been built. Chadwell Heath is intended to be included in the proposed sewerage scheme for Ilford.

In December two deaths from diphtheria occurred in a cottage at Collier Row, about two miles north of Romford and three miles north-east of Chadwell Heath. Collier Row is a sparsely populated tract, rather than a village, and stands on the London clay. The cottage was in fairly good sanitary condition. The first case began on November 30th; the patient was a boy of seven, attending the National School at Havering-atte-Bower. The origin of this case could not be traced, but there are said to have been some cases of diphtheria in the adjoining parish of Stapleford, from which children attended the

same school. Earlier in the autumn there were some cases of scarlet fever in the neighbourhood; and with one of the patients, who recovered about the middle of October, the boy who had diphtheria had associated, but the interval seems too long for there to be any connexion between them. In a house close to the school at Havering-atte-Bower there were, at the time of my visit (February 25th), three children suffering from sore throat; they had redness of the tonsils, fauces, and margin of the soft palate, but no diphtheritic exudation, nor marked enlargement of the cervical glands. A bad smell in the house was complained of from an untrapped drain in the scullery, with which drain the overflow of the privy cesspool is connected.

In the latter part of December an outbreak occurred in the village of Dagenham. Nine cases have come to knowledge, occurring in four households, in one of which there were three deaths. The first case began on December 24th; it was not seen by a medical man, and the cause of death was registered, without a certificate, as "bronchitis," but the symptoms are described as having been "like croup;" and there can be little doubt that it was diphtheria, as three other children in the same family were shortly afterwards attacked, of whom two died from what was certified as diphtheria, while the one who recovered has presented symptoms of paralysis. In a neighbouring house a child attending the same school as the first was taken ill about the same day, and an invalid young woman in a third house two days later. Apparently these three cases must have contracted the disease independently of each other, or from some common source, not from one another; but no circumstance common to the three could be ascertained. The three houses are within a hundred yards of each other, but the back premises are not in common, and there are other houses between them which were not attacked. Their sanitary condition, though not satisfactory, was not worse than or so bad as that of many other houses in Dagenham.* At the fourth house the patient, an elderly woman, had been nursing the children at the first house.

There were some cases of scarlet fever in a neighbouring house at the time of my visit, but these began a month after the last diphtheria case, and the first of them was a child who was taken ill on the day that he was brought home from North Woolwich, where he had been staying for three days in a house in which there were then other cases of scarlet fever.

Dagenham parish is a wide one, but the village is somewhat compact, consisting of two streets at right angles to one another, in which the houses are in nearly continuous rows. Most of the houses are old and dilapidated. There is no sewerage; the house slops run into ditches, cesspools, or pits: sewage nuisances are frequent in the neighbourhood of houses. The privies are ill made and offensive, having deep cesspits, and some being too close to houses. Water is obtained from wells in the gravel bed, which are suspiciously near to privies, cesspools, and other sources of contamination.

I am informed by Mr. Wright that in December 1883 there were also some cases of diphtheria in the Romford Urban district. I cannot learn that these several outbreaks had any connexion one with another.

H. FRANKLIN PARSONS.

4th March 1884.

* The medical officer of health attributed the diphtheria at the first house to the contents of the privy having been spread over the garden close to the house; but, so far as I can learn, this was some months before the outbreak.

APPENDIX.

REPORT on a SAMPLE of WATER received from Dr. H. F. PARSONS on February 16th, 1884.

The water has a yellowish brown colour, slight musty smell, and is slightly turbid. On standing it yields a trace of deposit consisting chiefly of mineral matter, but containing particles of decayed wood, fungoid growths, hairs of oats, various vegetable fibres, starch cells, &c.

The amount of nitric acid present in the water is high; it yields much albuminoid ammonia, and absorbs much oxygen from permanganate; on the other hand, the proportion of chlorine is very moderate. The foregoing shows that the water is polluted to a considerable degree by organic matter, probably of vegetable origin chiefly (moderate proportion of chlorine), but in part also from either sewage or surface drainage (high proportion of nitric acid and character of deposit).

The water in its present condition is unfit for domestic use.

Analytical details annexed.

Appearance	-	-	-	-	-	-	-	Slightly turbid.
Colour	-	-	-	-	-	-	-	Yellowish brown.
Taste	-	-	-	-	-	-	-	None.
Smell	-	-	-	-	-	-	-	Slightly musty.
Deposit	-	-	-	-	-	-	-	Very slight.
Phosphoric acid	-	-	-	-	-	-	-	Trace.
Poisonous metals	-	-	-	-	-	-	-	None.
Hardness before boiling	-	-	-	-	-	-	-	19 degrees, Clarke.
Hardness after boiling	-	-	-	-	-	-	-	13 degrees, Clarke.
								Grains per gallon.
Oxygen absorbed from permanganate	-	-	-	-	-	-	-	0.087
Total dry residue	-	-	-	-	-	-	-	28.84
Colour of residue	-	-	-	-	-	-	-	Yellow.
Behaviour of residue on ignition	-	-	-	-	-	-	-	Blackens. Peculiar odour of burning organic matter.
Chlorine	-	-	-	-	-	-	-	1.225
Nitric acid	-	-	-	-	-	-	-	3.612
Ammonia	-	-	-	-	-	-	-	0.0049
Albuminoid ammonia	-	-	-	-	-	-	-	0.009

A. DUPRÉ.

Westminster Hospital,
February 25th, 1884.

